

11/17/2008

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Previously Presented): A thermoelectric material which is a sintered body and represented by composition formula (1) and comprises as a major phase an MgAgAs crystal structure, the sintered body being obtained by manufacturing an alloy containing predetermined elements, pulverizing the alloy to obtain an alloy powder, and monolithic molding the alloy powder by sintering, hot press or SPS method, wherein the composition formula (1) is $(\text{Ti}_{a1}\text{Zr}_{b1}\text{Hf}_{c1})_x\text{Ni}_y\text{Sn}_{100-x-y}$, and

$a1, b1, c1, x$ and y satisfy the conditions of: $0 < a1 < 1, 0 < b1 < 1, 0 < c1 < 1,$
 $a1+b1+c1=1, 30 \leq x \leq 35$ and $30 \leq y \leq 35,$

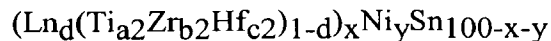
and the sintered body has a dimensionless figure-of-merit ZT value of not less than 0.05 at 300° K.

Claim 2 (Original): The thermoelectric material according to claim 1, wherein Ti, Zr and Hf in said composition formula (1) are partially replaced by at least one element selected from the group consisting of V, Nb, Ta, Cr, Mo and W.

Claim 3 (Original): The thermoelectric material according to claim 1, wherein Ni in said composition formula (1) is partially replaced by at least one element selected from the group consisting of Mn, Fe, Co and Cu.

Claim 4 (Original): The thermoelectric material according to claim 1, wherein Sn in said composition formula (1) is partially replaced by at least one element selected from the group consisting of As, Sb, Bi, Ge, Pb, Ga and In.

Claim 5 (Withdrawn): A thermoelectric material which is represented by the following composition formula (2) and comprises as a major phase an MgAgAs type crystal structure:



composition formula (2);

(wherein Ln is at least one element selected from the group consisting of Y and rare earth elements; and a_2 , b_2 , c_2 , d , x and y satisfy the conditions of:

$$0 \leq a_2 \leq 1, 0 \leq b_2 \leq 1, 0 \leq c_2 \leq 1, a_2 + b_2 + c_2 = 1, 0 < d \leq 0.3,$$

$$30 \leq x \leq 35 \text{ and } 30 \leq y \leq 35).$$

Claim 6 (Withdrawn): The thermoelectric material according to claim 5, wherein Ti, Zr and Hf in said composition formula (2) are partially replaced by at least one element selected from the group consisting of V, Nb, Ta, Cr, Mo and W.

Claim 7 (Withdrawn): The thermoelectric material according to claim 5, wherein Ni in said composition formula (2) is partially replaced by at least one element selected from the group consisting of Mn, Fe, Co and Cu.

Claim 8 (Withdrawn): The thermoelectric material according to claim 5, wherein Sn in said composition formula (2) is partially replaced by at least one element selected from the group consisting of As, Sb, Bi, Ge, Pb, Ga and In.

Claim 9 (Withdrawn): A thermoelectric material which is represented by the following composition formula (3) and comprises as a major phase an MgAgAs type crystal structure:

$\text{Ln}_1\text{XNiYSb}_{100-\text{X}-\text{Y}}$ composition formula (3);

(wherein Ln_1 is at least one element selected from the group consisting of Sc, Y, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th and U; and X and Y satisfy the conditions of: $30 \leq \text{X} \leq 35$ and $30 \leq \text{Y} \leq 35$, respectively).

Claim 10 (Withdrawn): The thermoelectric material according to claim 9, wherein Ln_1 in said composition formula (3) is partially replaced by at least one element selected from the group consisting of Ti, Zr, Hf, La, Ce, Pr, Nd, Sm, Eu, Be, Mg, Ca, Sr and Ba.

Claim 11 (Withdrawn): The thermoelectric material according to claim 9, wherein Ni in said composition formula (3) is partially replaced by at least one element selected from the group consisting of V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Rh, Ir, Pb, Pt, Cu, Ag, Au and Zn.

Claim 12 (Withdrawn): The thermoelectric material according to claim 9, wherein Sb in said composition formula (3) is partially replaced by at least one element selected from the group consisting of Al, Si, Ga, Ge, As, In, Sn, Pb and Bi.

Claim 13 (Withdrawn): A thermoelectric material which is represented by the following composition formula (4) and comprises as a major phase an MgAgAs type crystal structure:

$(\text{Ln}_2\text{pY}_{1-\text{p}})\text{XNiYSb}_{100-\text{X}-\text{Y}}$

composition formula (4);

(wherein Ln_2 is at least one element selected from the group consisting of Sc, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th and U; and p, X and Y satisfy the conditions of: $0.001 \leq \text{p} \leq 0.999$, $30 \leq \text{X} \leq 35$ and $30 \leq \text{Y} \leq 35$, respectively).

Claim 14 (Withdrawn): The thermoelectric material according to claim 13, wherein Ln₂ in said composition formula (4) is partially replaced by at least one element selected from the group consisting of Ti, Zr, Hf, La, Ce, Pr, Nd, Sm, Eu, Be, Mg, Ca, Sr and Ba.

Claim 15 (Withdrawn): The thermoelectric material according to claim 13, wherein Ni in said composition formula (4) is partially replaced by at least one element selected from the group consisting of V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Rh, Ir, Pb, Pt, Cu, Ag, Au and Zn.

Claim 16 (Withdrawn): The thermoelectric material according to claim 13, wherein Sb in said composition formula (4) is partially replaced by at least one element selected from the group consisting of Al, Si, Ga, Ge, As, In, Sn, Pb and Bi.

Claim 17 (Original): A thermoelectric element comprising: p-type thermoelectric material and n-type thermoelectric material, both of which are alternately connected with each other in series, wherein the n-type thermoelectric material comprises the thermoelectric material claimed in Claim 1.

Claim 18 (Withdrawn): A thermoelectric element comprising: p-type thermoelectric material and n-type thermoelectric material, both of which are alternately connected with each other in series, wherein the n-type thermoelectric material comprises the thermoelectric material claimed in Claim 5.

Claim 19 (Withdrawn): A thermoelectric element comprising: p-type thermoelectric material and n-type thermoelectric material, both of which are alternately connected with

each other in series, wherein the p-type thermoelectric material comprises the thermoelectric material claimed in Claim 9.

Claim 20 (Withdrawn): A thermoelectric element comprising: p-type thermoelectric material and n-type thermoelectric material, both of which are alternately connected with each other in series, wherein the p-type thermoelectric material comprises the thermoelectric material claimed in Claim 13.

Claim 21 (New): The thermoelectric material according to claim 1, wherein the sintered body has a dimensionless figure-of-merit ZT value of 0.08 at 300° K.